

NOTES ON THREE SPECIES OF THE GENUS COENONYCHA
HORN
(Coleoptera, Scarabaeidae)

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In view of the somewhat limited information available on species of the genus *Coenonycha* Horn, it was thought the following notes concerning three recently described species might prove of interest.

The type series of *C. bowlesi* Cazier was collected about three miles northeast of Benton, Mono County, California, by J. W. Tilden and C. W. Bowles. The first specimens taken were attracted to a gas lantern at dusk. The remainder were collected from the tips of *Artemisia tridentata*, one person collecting while the other held the light. Most of them had the forelegs extended, a habit common to species of this genus. They seemed indifferent to light that was held on them, though some were attracted to the light if it remained stationary for a period of time. The vegetation of this area is predominantly *Artemisia tridentata*, with an admixture of other bushy composites. *C. bowlesi* may occur on other plants, although to date it has not been taken elsewhere.

C. testacea Cazier, described from Cuyama Canyon, Santa Barbara County, California, was taken in large numbers about ten miles west of Simmler, San Luis Obispo County, by the authors on March 20-22, 1940. This species was closely associated with *Eriogonum fasciculatum* here as in the type locality. On each of the three evenings in the Simmler area the first specimens noted came to a gas lantern shortly after sundown. Mating pairs were observed about dark and commonly later in the evening.

The insects were taken in numbers from the tips of the plants, and normally sat with the forelegs extended as in *bowlesi*. They have well developed flight wings but seem averse to flying. The number taken at light was very small in proportion to the population that was found to exist in the immediate area. The few that came to light must have flown there, since the collecting sheet was clear of the ground. Specimens were taken from the plants until about 12:00 P. M. No doubt they could have been taken later, although we found the insects less numerous in the late hours than they were earlier in the evening.

A third species, *C. ampla* Cazier, was also found near Simmler, but on *Juniperus californica*, the only tree in the vicinity. The first was taken by beating about 10:00 P. M., March 21. Extensive beating and inspection yielded several others on the same night.

On the succeeding night, these were observed carefully. At first we thought them rare, since so few were found, but one location was discovered where about 18 were taken. Though relatively common, they did not approach *testacea* in numbers, in this area at least.

Careful approach enabled us to observe these insects without disturbing them. Each was found at or near the tip of a twig. This species proved to be negatively phototropic. They would nearly always drop at the close approach of the light, or would edge around to the other side of the twig. They were seen to extend their forelegs as did the other two species. It was noted also that they dropped if our breath was blown on them. Whether this was due to objection to the air current or to another factor we do not know.

At first no feeding was observed. It occurred to us that this might be due to the light. Such proved to be the case. When the light was weakened, the beetles became active and fed. When in moderate to strong light they suspended activity. One of us observed while the other slowly removed the light. The beetle was seen to crawl deliberately along the limb and begin to feed. With a slow return of the light, the beetle first ceased to feed, then stopped all movement, and as the light grew stronger, extended its legs and dropped to the foliage beneath. It made no effort to extricate itself from the position in which it landed as long as the light was present. With the removal of the light, activity was resumed gradually. Several were observed to behave in this same manner, and although the quiescent individuals were conspicuous at all times, they made no effort at concealment.

This habit might easily lead to their dropping before being taken by beating, and it seems likely that the species is more common than our collecting results show.

All three were found at the tips of their respective forage plants with forelegs extended, but in the case of *ampla* this appeared to be the first stage in a negative response to light, for with an increase in the intensity of the light they extended the other pairs of legs as well, and dropped from the trees.

None of these species was found in daytime, all activities of mating and feeding being strictly nocturnal, nor were any taken on any plant other than the one listed for each species.

BREEDING OF *PHOEBIS SENNAE MARCELLINA* CRAM.
IN SAN JOSE, CALIFORNIA
(Lepidoptera, Pieridae)

In October, 1941, Piazza first noted larvae of this species on cultivated shrubs of *Cassia tomentosa*, and later located pupae and eggs. Reared specimens emerged continuously during the fall. Piazza and Tilden took a considerable number of all stages from a shrub of the same species, on December 2, 1941, and these were reared by Tilden.

From 17 chrysalids removed from the shrub and kept indoors, 2 perfect males, 4 perfect females emerged, while 6 females emerged with damage from defective chrysalids. Two chrysalids were parasitized. Three failed to produce adults. Emergence dates range from December 4 to January 9 (1942). The proportion of females seems unusual, there being 8 females and 4 males, a ratio of 2:1. Adults reared from specimens collected as larvae emerged in better condition than those obtained from specimens that had pupated before being taken, suggesting probable damage to the chrysalids in removing them from the food plant.

Emerged specimens refused to mate in captivity. Eggs taken on December 2 did not hatch before the project was abandoned in June, 1942. All specimens taken as larvae matured and pupated; some still had not emerged in June, indicating a long pupal stage under some conditions.

Although adults of *P. s. marcellina* Cram. have been noticed repeatedly in the San Jose area over a period of several years, this appears to be the first time that the entire life cycle has been observed at any locality so far north. Santa Barbara County is given by Dr. J. A. Comstock as the usual northern limit of the (breeding?) range.

It is possible that the species may be establishing itself in the San Jose area, probably due to the cultivation of suitable food plants, which enable stragglers of this strong-flying butterfly to form at least temporary colonies north of its normal range.—
J. W. TILDEN.